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WASHITA UPDATE

Progress Status
Washita River Flood Prevention Project



U. S. Department of Agriculture
Soil Conservation Service
Stillwater, Oklahoma

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Watershed maintenance problems are receiving high priority attention from project sponsors. ▲

Many new lakes in the Washita Project include special plantings for wildlife habitat. ►



Cover photo shows plunge basin of site No. 27 in the Caddo Creek Watershed Project.

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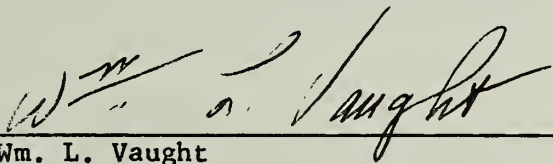
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CATALOGING - PREP.

FOREWORD

This Washita Update is prepared to show the progress status of the subwatersheds on the Washita River Flood Prevention Project, authorized by the Flood Control Act of 1944.

I wish to compliment the many dedicated conservation leaders of the Washita Council for their vision and hard work. They deserve most of the credit for the progress reflected in this report.



Wm. L. Vaught

WASHITA RIVER

History and Description

The Washita River Basin extends from the foot of the caprock in the Texas panhandle southeast across Oklahoma. It drains areas of the Rolling Red Plains, Crosstimber Prairies, and the Arbuckle Mountains and empties into the Red River above Denison Dam. It comprises 5,095,040 acres with a total flood plain area of 377,000 acres. This land has seen many changes. It once was a highly productive hunting ground covered with lush native grasses and abounding with such wild game as buffalo, deer, antelope, wild turkey, and prairie chicken. Streams flowed the year round and fish were abundant. It provided a plenteous hunting ground for the Indians and scattered white settlers. At the beginning of statehood as settlement came to Oklahoma the fertile plains and prairies were plowed and converted to cultivated fields leaving the soil void of natural cover and protection and increasing runoff and erosion. The sparkling clear waters then became known as the muddy Washita as the once bountiful river took on a ragged dress of caving banks, silt-filled channels, and dry stream beds. In the spring of 1934 the Hammon flood claimed 17 lives and caused many millions of dollars of damage.

In the early 1930's a group of leaders along the Washita River realized the need for action. As a result, mainly of their efforts, the Department of Agriculture was authorized by Congress in 1936 to survey the problems and needs of the basin.

The Project in Brief

The Washita River Watershed was authorized for treatment under the Flood Control Act of 1944. In 1945 and 46 emphasis was placed upon land treatment measures. Land treatment benefits are assumed to equal the costs which total \$79,766,475; \$74,760,997 are local and \$5,005,478 are Federal. In 1946 and 47 land treatment measures were still stressed but plans were also being made for the installation of structural measures. There are 56 subwatersheds presently planned and 52 under construction or completed. Total cost of project is \$174,058,509 of which \$86,707,663 is local and \$87,350,846 is Federal (table 1). Estimated average annual costs on presently planned subwatersheds are \$3.8 million (table 2). Average annual benefits attributed to presently planned subwatersheds are \$7.8 million (table 2). This provides \$2.03 benefit for each dollar cost of structural measures. These benefits are comprised of \$1.6 million mainstem benefits and \$6.2 million tributary benefits. The problems on the 65 tributaries and on the mainstem include floodwater, sediment and erosion damages on bottomland, municipal water supply and recreation needs, and need for water supplies for irrigation. Local sponsors of each subwatershed are Conservation Districts, Conservancy Districts, Watershed Associations, and City and Town Councils with overall guidance provided by the Washita Flood Prevention Council. More than 85% of the land is privately owned, and tax-free. Restricted Indian land amounts to 9%. There are 30,392 acres in the Black Kettle National Grassland which is administered by the Forest Service.

Progress in Land Treatment

Resource conservation plans have been developed on approximately 83% of the privately owned land on the Washita River Watershed, and the Bureau of Indian Affairs has agreements for proper use and treatment of the restricted Indian lands. Emphasis continues on providing resource conservation plans for all land within a treated watershed. Good progress has been made in application of land treatment measures which will protect the watershed area and reduce sediment yields. Roadside erosion is a problem and a major contributor of sediment. Approximately 68% of the land is considered "adequately treated". Thirty-eight percent of the watershed was cultivated in 1964 compared to forty-six percent cultivated in 1949. Latest census figures were unavailable at this time.

Progress in Structural Measures

At the end of 22 years of construction the following structural measures have been completed: 942 floodwater retarding structures; 19 multipurpose structures including municipal water, recreation, fish and wildlife; 72 grade stabilization structures; treatment of 10 critical areas; 44 drop inlets; 46.6 miles of channel improvement; 27 gully plugs; 18 miles floodwater diversion; seven recreation developments and one fish and wildlife development. See table 3 for numbers of each structural measure planned and constructed. Thirty-eight of the planned and constructed single-purpose structures are in Texas. The estimated cost of planned measures is \$94,292,034 of which \$11,946,666 is local and \$82,345,368 is federal (table 1).

Effectiveness of the Project

The implementation of the total flood prevention program has had an apparent impact on the area encompassed by the Washita River Basin. Multiple-purpose structures have not only provided protection from floods but also have afforded municipal, industrial, irrigation and recreational water supplies as well. Eight cities and/or towns are provided municipal and recreation water. These urban and rural centers have a combined population in excess of 66,000 people. Duncan, Oklahoma, boasts of an abundance of water from three multiple-purpose structures on Wildhorse Creek. These structures provide water for two industries plus its urban needs. Ardmore, Oklahoma, advertised a bountiful water supply when seeking new industry. Two multiple-purpose sites on Caddo Creek are currently furnishing water for an industrial tire and rubber company. Four of the above five structures also provide recreation for Ardmore, Duncan, and the surrounding areas. Oak Creek site number 5 is a multiple-purpose structure which furnishes flood protection and fish and wildlife habitat. Three multiple-purpose sites provide irrigation storage and a supplemental supply of water for crops during dry periods. Three single-purpose structures are being used for municipal water supplies, three more are being used for recreation and numerous others are used for incidental irrigation and recreation. On Sugar Creek it is conservatively estimated that 1,255 acres are annually irrigated from flood prevention structures. There are many other examples of supplemental irrigation occurring along the entire Washita River Basin.

Other impacts from the flood prevention program are also apparent. On Sandstone Creek farmers report an increase in farming efficiency as timely plantings are made and the cost of additional land preparation and reseedings are reduced. With the total flood prevention program, they state the flood plain is less susceptible to silting, potholing, and scour.

Before the implementation of the flood prevention program Oak Creek would flood two to three times a year and some years as many times as seven or eight. After land treatment and nine floodwater retarding structures were completed, there has been little or no damage done to either land or roads and bridges. County governments now have less maintenance costs and these monies can be used elsewhere.

Flood prevention structures on Rock Creek faced the most severe test when rainfall intensities exceeded the 100-year frequency level on October 7, 1970. Although severe flooding did occur damages from this storm were reduced by floodwater retarding structures by 56%. Depth of flooding in Sulphur reached 11 feet and it is estimated it would have been an additional 5 feet deeper without flood prevention structures.

Areas of the Washita River flood plain that once were used intensively then shifted to low value crops because of the flood hazard are being reclaimed. In Reach I there are 10,000 acres that are restored to their former productivity. This process is currently taking place in the other reaches of the Washita. With this reduction in flooding hazard, channel widening and bank cutting are reduced preventing loss of production and loss of tax base. In Reach III alone annual benefits from reducing this type of damages exceed \$48,000.

TABLE 1 - ESTIMATED PROJECT INSTALLATION COST

Washita River

(dollars)

		Subwatersheds planned to date-July 1972		
Reach		Land Treatment	Structural Measures	Total
I	Federal	618,137	12,099,183	12,717,320
	Local	3,890,941	524,145	4,415,086
	Subtotal	4,509,078	12,623,328	17,132,406
II	Federal	2,629,174	30,155,669	32,784,843
	Local	55,878,766	4,382,998	60,261,764
	Subtotal	58,507,940	34,538,667	93,046,607
III	Federal	380,708	16,074,853	16,455,561
	Local	5,876,614	1,720,832	7,597,446
	Subtotal	6,257,322	17,795,685	24,053,007
IV	Federal	1,377,459	24,015,663	25,393,122
	Local	9,114,676	5,318,691	14,433,367
	Subtotal	10,492,135	29,334,354	39,826,489
Total	Federal	5,005,478	82,345,368	87,350,846
	Local	74,760,997	11,946,666	86,707,663
Grand Total		79,766,475	94,292,034	174,058,509

TABLE 2
STRUCTURAL MEASURES
WASHITA RIVER

Benefit-Cost

Subwatersheds planned to date-July 1972					
Reach	Average Annual <u>1/</u> Benefits			Cost	Benefit-Cost Ratio
	Subwatershed	Mainstem	Total		
I	427,255	153,209	580,464	418,318	1.39:1
II	2,141,553	638,962	2,780,515	1,480,635	1.88:1
III	1,583,150	814,960	2,398,110	748,724	3.19:1
IV	2,089,682	38,903	2,128,585	1,235,657	1.72:1
Total	6,241,640	1,646,034	7,887,674	3,883,334	2.03:1

1/ Dollars

TABLE 3

PROJECT MEASURES

Washita River

Subwatersheds planned to date-July 1972																								
Reach	: Single Purpose		: Multiple Purpose		: Stabilization		: Grade		: Critical		: Channel		: Area		: Recreational		: Drop Inlets		: Gully Plugs		: Floodwater			
	: Structure		: Structure		: Structure		: Structure		: Treatment		: Improvement		: Development		: Development		: No.		: No.		: Mile			
	No.	1/	No.	2/	No.	1/	No.	2/	No.	1/	No.	2/	No.	1/	No.	2/	No.	1/	No.	2/	No.	1/	No.	2/
I	203	3/	200	3/	4	4/	45	45	1.7	1.7	8	2	3	3	5	5	-	-	-	-	12.0	12.0		
II	379		315		4	5/	4	5/	22	18	62.2	23.3	2	2	1	6/	1	6/	12	10	11	10	4.5	3.5
III	267		179		2	2	3	2	20.0	7.3	6	6	1	2	11	11	-	-	-	-	2.5	2.5		
IV	295		248		9	9	9	7	48.6	14.3	3	-	3	2	18	18	17	17	4.2	-	-	-		
Totals	1,144		942		19	19	79	72	132.5	46.6	19	10	8	8	46	44	28	27	23.2	18.0				
1/ Planned																								
2/ Built or under construction																								
3/ Includes 38 sites in Texas																								
4/ Planned as single purpose, but are serving multi-purpose use.																								
5/ One site planned as single purpose, but is serving multi-purpose use.																								
6/ Fish and wildlife development																								

1/ Planned

2/ Built or under construction

3/ Includes 38 sites in Texas

4/ Planned as single purpose, but are serving multi-purpose use.

5/ One site planned as single purpose, but is serving multi-purpose use.

6/ Fish and wildlife development

Barnitz Creek Watershed (Dewey and Custer Counties, Oklahoma)

Sponsors: Upper Washita Conservation District
Dewey County Conservation District

Size: 178,674 acres

Work Plan Approved: September 1950

Estimated Total Cost of Project:

a. Federal Funds	\$ 3,572,591
b. Other	<u>5,730,003</u>
Total	\$ 9,302,594

Structural Measures

Annual Cost	\$ 150,961
Annual Benefit	265,991
Benefit-Cost Ratio	1.76:1

Land Treatment:

a. Percent of Land Adequately Treated	75%
b. Percent of Planned Measures Applied 1-1-72	80%

Watershed Problems:

Floodwater, sediment, and scour damages to agricultural land.
Damages to roads and bridges. Interruption of travel.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

70 floodwater retarding structures

Structural Measures Installed July 1972:

70 floodwater retarding structures

Easement Status:

Complete

Acres Flood Plain Protected within Watershed: 7,936

Effectiveness of Project:

After a 3 inch rain in about 5 hours on May 11, 1972 (with 1½ inches falling in 30 minutes) there was some minor flooding north of Butler where the channel had been straightened and lacked capacity or had been changed to side of valley. Had the structures not been in place, there could have been minor flooding above the bridge on Highway 33 east of Butler damaging the growing crops and bottom land. Prior to the project there were one or more major floods and up to 5 minor floods annually. Landowners permit fishing in the majority of these reservoirs. Land is being irrigated from sites 60 and 61 by gravity flow. Site 43 is being used for overnight camping.

Bear Creek Watershed (Custer and Washita Counties, Oklahoma)

Sponsors: Upper Washita Conservation District
Washita County Conservation District

Size: 53,605 acres

Work Plan Approved: May 8, 1962

Estimated Total Cost of Project:

a. Federal Funds	\$ 1,315,097
b. Other	<u>1,757,206</u>
Total	\$ 3,072,303

Structural Measures:

Annual Cost	\$ 58,115
Annual Benefit	77,985
Benefit-Cost Ratio	1.34:1

Land Treatment:

a. Percent of Land Adequately Treated	70%
b. Percent of Planned Measures Applied 1-1-72	75%

Watershed Problems:

Floodwater, sediment, and scour damages to agricultural land.

Damages to roads, bridges and railroads. Interruption of travel.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

- 10 floodwater retarding structures
- 1.0 miles of channel improvement
- 3 grade stabilization structures

Structural Measures Installed or Contracted July 1972:

- 8 floodwater retarding structures
- 2 grade stabilization structures

Easement Status:

14 easements needed on 2 sites and 1 grade stabilization structure

Acres Flood Plain Protected within Watershed: 2,213

Effectiveness of Project:

In 1971 there was a 3 inch rain that fell in about 4 hours on a small portion of the watershed that would have caused some minor flooding had the structures not been in place. The landowner is installing equipment to irrigate from site 5.

Bear-Hybarger Creek Watershed (Garvin and McClain Counties, Oklahoma)

Sponsors: Garvin County Conservation District
McClain County Conservation District
Washita Conservancy District No. 1
City of Lindsay

Size: 23,357 acres

Work Plan Approved: April 19, 1960

Estimated Total Cost of Project:

a. Federal Funds	\$ 849,976
b. Other	438,013
Total	<u>\$ 1,287,989</u>

Structural Measures:

Annual Cost	\$ 41,249
Annual Benefit	81,436
Benefit-Cost Ratio	1.97:1

Land Treatment:

a. Percent of Land Adequately Treated	76%
b. Percent of Planned Measures Applied 1-1-72	74%

Watershed Problems:

Floodwater damage to agriculture land and urban areas.
Sediment and scour damages to agricultural land. Need for recreational development.

Project Purposes:

Flood prevention
Recreation

Structural Measures Planned July 1972:

- 1 multipurpose structure with flood prevention and recreation storage
- 10 floodwater retarding structures
- 7.3 miles of channel improvement
- 2.5 miles of floodwater diversions
- 1 recreational development

Structural Measures Installed July 1972:

- 1 multipurpose structure with flood prevention and recreation storage
- 10 floodwater retarding structures
- 7.3 miles of channel improvement
- 2.5 miles of floodwater diversions
- 1 recreational development

Easement Status:

Complete

Acres Flood Plain Protected within Watershed: 5,200 and City of Lindsay

Effectiveness of Project:

Very effective control especially the drainage channel through Lindsay and below. Highly productive land returned to intensive use growing alfalfa, broomcorn, and related crops. City of Lindsay has been protected from frequent flooding by new channelization of adjacent creek. An area previously poorly drained is now used as a municipal airport. New farm drains have been installed by landowners since depth of new channel is sufficient to accommodate discharge. A municipal golf course

created around the multipurpose structure and recreation development serves a large area. The recreation development (developed in cooperation with the Soil Conservation Service) serves as a public park. The combination of all facilities involved have created greater interest and participation by more people.

Beaver Creek Watershed (Custer County, Oklahoma)

Sponsors: Upper Washita Conservation District

Size: 56,605 acres

Work Plan Approved: June 2, 1958

Estimated Total Cost of Project:

a. Federal Funds	\$ 1,465,019
b. Other	<u>1,835,069</u>
Total	\$ 3,300,088

Structural Measures:

Annual Cost	\$ 60,484
Annual Benefit	85,258
Benefit-Cost Ratio	1.41:1

Land Treatment:

a. Percent of Land Adequately Treated	65%
b. Percent of Planned Measures Applied 1-1-72	70%

Watershed Problems:

Floodwater, sediment, and scour damages to agricultural land.
Damages to railroads, County and State roads and bridges.
Interruption of travel.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

16 floodwater retarding structures
2 grade stabilization structures

Structural Measures Installed July 1972:

15 floodwater retarding structures
2 grade stabilization structures

Easement Status:

No easements have been obtained on site 6.

Acres Flood Plain Protected within Watershed: 2,633

Effectiveness of Project:

Since the structures have been in place, there have been two locally heavy rains with no flood plain damage. Before the watershed project, damage on the flood plain was frequent, especially east of Arapaho to Clinton. Landowners are irrigating from sites 1 and 2A.

Beaver Dam Creek Watershed (Roger Mills County, Oklahoma)

Sponsors: Upper Washita Conservation District

Size: 27,620 acres

Work Plan Approved: August 1952

Estimated Total Cost of Project:

a. Federal Funds	\$ 388,274
b. Other	111,339
Total	<u>\$ 499,613</u>

Structural Measures:

Annual Cost	\$ 11,988
Annual Benefit	\$ 15,853
Benefit-Cost Ratio	1.32:1

Land Treatment:

a. Percent of Land Adequately Treated	63%
b. Percent of Planned Measures Applied 1-1-72	56%

Watershed Problems:

Floodwater, sediment, and erosion damages to agricultural land and roads and bridges.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

6 floodwater retarding structures

Structural Measures Installed July 1972:

6 floodwater retarding structures

Easement Status:

Complete

Acres Flood Plain Protected within Watershed: 695

Effectiveness of Project:

In the early part of June 1971, approximately 2 to 4 inches of rain fell in the Beaver Dam Watershed. Most of the sites were dry or very low and were able to store the runoff. This prevented flooding or damage to county roads and bridges.

Big Canyon Laterals Watershed (Carter, Johnston, and Murray Counties,
Oklahoma)

Sponsors: Carter County Conservation District
Johnston County Conservation District
Murray County Conservation District

Size: 24,689 acres

Work Plan Approved: To be included in planning of Reach IV of Washita
River

Big Kiowa Creek Watershed (Beckham and Roger Mills Counties, Oklahoma)

Sponsors: North Fork of Red River Conservation District
Upper Washita Conservation District

Size: 25,922 acres

Work Plan Approved: April 1953

Estimated Total Cost of Project:

a. Federal Funds	\$ 327,833
b. Other	<u>159,614</u>
Total	\$ 487,447

Structural Measures:

Annual Cost	\$ 11,303
Annual Benefit	21,664
Benefit-Cost Ratio	1.92:1

Land Treatment:

a. Percent of Land Adequately Treated	61%
b. Percent of Planned Measures Applied 1-1-72	68%

Watershed Problems:

Floodwater, sediment, and scour damages to agricultural land.
Interruption of travel on roads.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

6 floodwater retarding structures

Structural Measures Installed July 1972:

6 floodwater retarding structures

Easement Status:

Complete

Acres Flood Plain Protected within Watershed: 2,671

Effectiveness of Project:

In August 1970 a 5 to 6 inch rain fell in 5 to 5½ hours. No flooding occurred. In May 1972 a 5 inch rain fell in 4 hours. No flooding occurred but would have if structures had not been in place. The structures reduced the amount of overflow to less than 50 acres after heavy rains. Overnight camping is permitted on sites 1 and 2. Site 2 is used for fishing and swimming.

Big Sandy Creek Watershed (Johnston County, Oklahoma)

Sponsors: Johnston County Conservation District

Size: 40,119 acres

Work Plan Approved: To be included in planning of Reach IV of Washita River

Bitter Creek Watershed (Grady County, Oklahoma)

Sponsors: Grady County Conservation District

Size: 73,243 acres

Work Plan Approved: May 28, 1969

Estimated Total Cost of Project:

a. Federal Funds	\$ 1,308,706
b. Other	426,086
Total	<u>\$ 1,734,792</u>

Structural Measures:

Annual Cost	\$ 75,450
Annual Benefit	161,047
Benefit-Cost Ratio	2.13:1

Land Treatment:

a. Percent of Land Adequately Treated	76%
b. Percent of Planned Measures Applied 1-1-72	78%

Watershed Problems:

Floodwater, sediment, and erosion damages to agricultural and non-agricultural land.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

22 floodwater retarding structures

Structural Measures Installed or Contracted July 1972:

4 floodwater retarding structures

Easement Status:

All easements have been secured except for 2 easements on one site

Acres Flood Plain Protected within Watershed: 6,888

Effectiveness of Project:

Sites 2 and 6 have been completed. There have been two rains of more than 2 inches each since their completion and the structures have been effective in reducing flood damages below the sites.

Boggy Creek Watershed (Washita County, Oklahoma)

Sponsors: Washita County Conservation District

Size: 74,043 acres

Work Plan Approved: May 10, 1961

Estimated Total Cost of Project:

a. Federal Funds	\$ 1,855,408
b. Other	<u>2,539,568</u>
Total	\$ 4,394,976

Structural Measures:

Annual Cost	\$ 86,802
Annual Benefit	124,996
Benefit-Cost Ratio	1.44:1

Land Treatment:

a. Percent of Land Adequately Treated	75%
b. Percent of Planned Measures Applied 1-1-72	85%

Watershed Problems:

Floodwater, sediment, and scour damages to agricultural land.
Damages to roads, bridges and railroads. Interruption of travel.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

36 floodwater retarding structures

Structural Measures Installed July 1972:

36 floodwater retarding structures

Easement Status:

Complete

Acres Flood Plain Protected within Watershed: 4,836

Effectiveness of Project:

September 19, 20, and 21, 1965 official weather report of 8.48 inches of rain was reported - unofficial reports ranged from 6 to 10 inches. Damage was reduced by 65% over what would have occurred if structures had not been in place. May 29, 1966 - an official 5.27 inches of rain fell on the west side of Boggy Creek in a very short period of time. The only damage occurred above the structure. June 5, 1968 - unofficial report of 7.5 inches of rain fell in 48 hours in the east portion of watershed. There was no damage to crops or livestock below the structures. There was minor flooding on parts of Boggy Creek which lasted about 4 hours. May 3 and 7, 1969 - unofficial report of rainfall ranged from 6 to 10 inches. There was no damage below structures to either crops or livestock. Ninety acres of Bermudagrass are irrigated from site 13. Also Site 13 is leased to approximately 25 people for fishing. Eight individuals irrigate 193 acres from stream channel below structures.

Broken Leg Creek Watershed (Roger Mills County, Oklahoma)

Sponsors: Upper Washita Conservation District

Size: 10,523 acres

Work Plan Approved: June 1948

Estimated Total Cost of Project:

a. Federal Funds	\$ 148,049
b. Other	15,380
Total	<u>\$ 163,429</u>

Structural Measures:

Annual Cost	\$ 5,885
Annual Benefit	10,769
Benefit-Cost Ratio	1.83:1

Land Treatment:

a. Percent of Land Adequately Treated	65%
b. Percent of Planned Measures Applied 1-1-72	68%

Watershed Problems:

Floodwater damage to agricultural and non-agricultural land.
Sediment damage, overbank deposition, erosion damage and flood
plain scour.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

3 floodwater retarding structures

Structural Measures Installed July 1972:

3 floodwater retarding structures

Easement Status:

Complete

Acres Flood Plain Protected within Watershed: 313

Effectiveness of Project:

In addition to the flood protection provided to landowners,
recreation has also been established on some sites.

Butler Laterals Watershed (Custer County, Oklahoma) Included in
Supplemental Plan of Reach II Segment of Washita River Watershed

Sponsors: Upper Washita Conservation District

Size: 47,114 acres

Work Plan Approved: July 1, 1968

Estimated Total Cost of Project:

a. Federal Funds	\$ 576,247
b. Other	<u>1,487,499</u>
Total	\$2,063,746

Structural Measures:

Annual Cost	\$ 22,302
Annual Benefit	29,000
Benefit-Cost Ratio	1.30:1

Received benefits from flood plain of Washita River in Reach II area.

Land Treatment:

a. Percent of Land Adequately Treated	65%
b. Percent of Planned Measures Applied 1-1-72	60%

Watershed Problems:

Floodwater, sediment, and scour damages to agricultural and non-agricultural land.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

8 floodwater retarding structures
4 grade stabilization structures

Structural Measures Installed July 1972:

5 floodwater retarding structures
3 grade stabilization structures

Easement Status:

One site is cleared. Three easements are needed on 2 sites.
Landowner has constructed a grade stabilization structure that solves this problem for the present time.

Acres Flood Plain Protected within Watershed: 522

Effectiveness of Project:

There has been one locally heavy rain on this partially completed watershed with the channel being almost full. There could have been some minor flooding at the lower end without partial project in place. Fish and wildlife habitats have been developed on sites 4 and 5. The landowner on site 2 is interested in developing a fish pond below the site.

Caddo Creek Watershed (Carter, Murray, and Stephens Counties, Oklahoma)

Sponsors: Arbuckle Conservation District
Stephens County Conservation District
Murray County Conservation District
City of Ardmore

Size: 263,349 acres

Work Plan Approved: September 13, 1960

Estimated Total Cost of Project:

a. Federal Funds	\$ 3,225,964
b. Other	2,418,334
Total	<u>\$ 5,644,298</u>

Structural Measures:

Annual Cost	\$ 168,522
Annual Benefit	342,726
Benefit-Cost Ratio	2.03:1

Land Treatment:

a. Percent of Land Adequately Treated	71%
b. Percent of Planned Measures Applied 1-1-72	73%

Watershed Problems:

Floodwater, sediment and scour damages to agricultural lands. Damages to roads, bridges, and oil field installations. Need for municipal water supplies for the City of Ardmore. Need for recreation facilities in the area.

Project Purposes:

Flood prevention
Municipal water supplies
Recreation

Structural Measures Planned July 1972:

2 multipurpose structures with flood prevention, municipal and recreation storage
1 multipurpose structure with flood prevention and irrigation
26 floodwater retarding structures
2 recreation developments

Structural Measures Installed July 1972:

2 multipurpose structures with flood prevention, municipal and recreation storage
1 multipurpose structure with flood prevention and irrigation
25 floodwater retarding structures

Easement Status:

Site 1 is not anticipated to be built in the near future due to oil field equipment.

Acres Flood Plain Protected within Watershed: 10,194

Effectiveness of Project:

The installation of 26 floodwater retarding structures has eliminated all flooding since installation in 1969. Formerly flooded land is being returned to productive cultivated crops. Two municipal sites are furnishing water for Ardmore and recreation facilities are being developed on these two and also on other sites in the watershed. Site 7 is a multipurpose structure being used for irrigation. Although rains of 25 year storm intensity have not occurred, the control of runoff from all storms has been successful.

Cavalry Creek Watershed (Washita County, Oklahoma)

Sponsors: Washita County Conservation District

Size: 69,952 acres

Work Plan Approved: May 1955

Estimated Total Cost of Project:

a. Federal Funds	\$ 1,300,285
b. Other	<u>2,243,789</u>
Total	\$ 3,544,074

Structural Measures:

Annual Cost	\$ 55,441
Annual Benefit	115,263
Benefit-Cost Ratio	2.08:1

Land Treatment:

a. Percent of Land Adequately Treated	70%
b. Percent of Planned Measures Applied 1-1-72	85%

Watershed Problems:

Floodwater, sediment and scour damages to agricultural land.
Damages to roads and bridges.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

31 floodwater retarding structures
3.2 miles of channel improvement
7 drop inlets
3.5 miles of floodwater diversions

Structural Measures Installed July 1972:

29 floodwater retarding structures
7 drop inlets
3.5 miles of floodwater diversions

Easement Status:

No easements have been obtained on two sites and channel improvement.

Acres Flood Plain Protected within Watershed: 3,777

Effectiveness of Project:

September 19 and 20, 1965, official rainfall measurement of 5.97 inches was recorded at Cordell. Rainfall varied from 5 to 11 inches. Structures reduced the damage by 79%. With all structures in place it is estimated that damages would have been reduced by 84%. May 31 to June 1, 1968, official rainfall measurement at Cordell was 1.85 inches. Unofficial reports north and west of Cordell ranged up to 7 inches. No crops or livestock were lost below structures. Minor sediment damage did occur in small local areas. May 3 to May 7, 1969, the official rainfall was 8.21 inches. Unofficial measured rainfall ranged from 7 inches to 11 inches. No crops or livestock were lost from flooding. There was a small amount of sediment damage. Forty acres is being irrigated from site 15 and 38 acres from site 28. Seven people irrigate 315 acres from stream channel below structures. One hundred twenty people use the sites for fishing.

Cherokee Sandy Creek Watershed (Garvin County, Oklahoma)

Sponsors: Garvin County Conservation District

Size: 46,291 acres

Work Plan Approved: July 23, 1958

Estimated Total Cost of Project:

a. Federal Funds	\$ 1,139,580
b. Other	<u>494,938</u>
Total	\$ 1,634,518

Structural Measures:

Annual Cost	45,622
Annual Benefit	69,767
Benefit-Cost Ratio	1.53:1

Land Treatment:

a. Percent of Land Adequately Treated	71%
b. Percent of Planned Measures Applied 1-1-72	76%

Watershed Problems:

Floodwater, sediment, and scour damages to agricultural land.
Damages to roads and bridges. Interruption of travel.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

21 floodwater retarding structures

Structural Measures Installed July 1972:

14 floodwater retarding structures

Easement Status:

18 easements needed on 7 sites

Acres Flood Plain Protected within Watershed: 4,400

Effectiveness of Project:

Part of this watershed is well protected. The flood plain has been returned to more intensive crops. Some protection of highway was apparent during the 1970 rain of 11 inches in 24 hours, when some of the emergency spillway crest was reached.

Chigley Sandy Creek Watershed (Garvin and Murray Counties, Oklahoma)

Sponsors: Garvin County Conservation District
Murray County Conservation District

Size: 29,349 acres

Work Plan Approved: July 1951

Estimated Total Cost of Project:

a. Federal Funds	\$ 842,671
b. Other	254,950
Total	<u>\$ 1,097,621</u>

Structural Measures:

Annual Cost	\$ 17,922
Annual Benefit	43,002
Benefit-Cost Ratio	2.40:1

Land Treatment:

a. Percent of Land Adequately Treated	76%
b. Percent of Planned Measures Applied 1-1-72	77%

Watershed Problems:

Floodwater, sediment, and scour damages to agricultural land.
Damages to roads and bridges. Interruption of travel.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

14 floodwater retarding structures

Structural Measures Installed July 1972:

14 floodwater retarding structures

Easement Status:

Complete

Acres Flood Plain Protected within Watershed: 3,372

Effectiveness of Project:

The plan as originally installed is highly effective. There are a few isolated areas, where no structural measures were planned, that need protective measures installed. Highway and railroad that formerly received damage were protected. Additional studies will be made in the Reach IV plan development for added protection. During a storm of May 17 and 18, 1957, the floodwater retarding structures in place were credited with reduction of floodwater and sediment damage by 70 percent. Several sites are being used for recreation such as boating, fishing, and hunting. One site is used by a club. Other sites are open to the public. Also one site is used for irrigation.

Cobb Creek Watershed (excludes Fast Runner) (Caddo, Custer, and Washita Counties, Oklahoma)

Sponsors: Deer Creek Conservation District
Mountain View Conservation District
North Caddo County Conservation District
South Caddo County Conservation District

Size: 207,161 acres

Work Plan Approved: November 1951

Estimated Total Cost of Project:

a. Federal Funds	\$ 1,195,635
b. Other	9,354,814
Total	<u>\$ 10,550,449</u>

Structural Measures:

Annual Cost	\$ 40,296
Annual Benefit	82,197
Benefit-Cost Ratio	2.04:1

Land Treatment:

a. Percent of Land Adequately Treated	81%
b. Percent of Planned Measures Applied 1-1-72	85%

Watershed Problems:

Floodwater, sediment, and scour damages to agricultural and non-agricultural land.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

8 floodwater retarding structures
2 grade stabilization structures

Structural Measures Installed July 1972:

6 floodwater retarding structures
2 grade stabilization structures

Easement Status:

8 easements are needed for 2 sites

Acres Flood Plain Protected within Watershed: 5,359

Effectiveness of Project:

The upper segment where work is complete has been very effective in preventing flood damages to the area below. Only one flood has put water out of the stream channel banks since installation. Present structures have reduced sediment inflow into Fort Cobb Reservoir. They also provide recreation for Weatherford and surrounding areas. On September 18-20, 1965, an official 8.75 inches of rain fell at Weatherford. The installed measures on Cobb Creek reduced flood damages below them by 40 percent.

Colbert Creek Watershed (Garvin, Grady, and McClain Counties, Oklahoma)

Sponsors: Garvin County Conservation District
Grady County Conservation District
McClain County Conservation District

Size: 14,812 acres

Work Plan Approved: September 1956

Estimated Total Cost of Project:

a. Federal Funds	\$ 195,562
b. Other	126,353
Total	<u>\$ 321,915</u>

Structural Measures:

Annual Cost	\$ 7,719
Annual Benefit	46,650
Benefit-Cost Ratio	6.04:1

Land Treatment:

a. Percent of Land Adequately Treated	79%
b. Percent of Planned Measures Applied 1-1-72	82%

Watershed Problems:

Floodwater, sediment and erosion damages to agricultural land

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

3 floodwater retarding structures

Structural Measures Installed July 1972:

3 floodwater retarding structures

Easement Status:

Complete

Acres Flood Plain Protected within Watershed: 736

Effectiveness of Project:

Due to the 3 structures on this watershed, floods have ceased to be a problem. The program is highly effective.

Cowden Laterals Watershed (Washita and Caddo Counties, Oklahoma) Included
in Supplemental Plan of Reach II Segment of
Washita River Watershed.

Sponsors: Mountain View Conservation District
South Caddo County Conservation District

Size: 81,884 acres

Work Plan Approved: July 1, 1968

Estimated Total Cost of Project:

a. Federal Funds	\$ 1,727,765
b. Other	2,692,403
Total	<u>\$ 4,420,168</u>

Structural Measures:

Annual Cost	\$ 73,486
Annual Benefit	100,231
Benefit-Cost Ratio	1.36:1

Received benefits from flood plain of Washita River in Reach II area

Land Treatment:

a. Percent of Land Adequately Treated	80%
b. Percent of Planned Measures Applied 1-1-72	85%

Watershed Problems:

Floodwater, sediment, and scour damages to agricultural and non-agricultural land.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

- 14 floodwater retarding structures
- 1.2 miles of channel improvement
- 2 grade stabilization structures

Structural Measures Installed or Contracted July 1972:

- 7 floodwater retarding structures
- 2 grade stabilization structures

Easement Status:

- 2 sites are cleared
- 17 easements are needed on 5 sites

Acres Flood Plain Protected within Watershed: 429

Effectiveness of Project:

Present structures have provided good protection below the sites. Some irrigation has been provided from impounded water. The structures provide livestock water, wildlife water, and recreation.

Griner Creek Watershed (Garvin and McClain Counties, Oklahoma)

Sponsors: McClain County Conservation District
Garvin County Conservation District

Size: 42,480 acres

Work Plan Approved: July 11, 1958

Estimated Total Cost of Project:

a. Federal Funds	\$ 925,149
b. Other	440,507
Total	<u>\$ 1,365,656</u>

Structural Measures:

Annual Cost	\$ 38,284
Annual Benefit	226,878
Benefit-Cost Ratio	5.93:1

Land Treatment:

a. Percent of Land Adequately Treated	77%
b. Percent of Planned Measures Applied 1-1-72	78%

Watershed Problems:

Floodwater and sediment damages to agricultural and non-agricultural land, and to oil field installations. Erosion damage to agricultural and non-agricultural land. Interruption of travel.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

21 floodwater retarding structures
4 drop inlets

Structural Measures Installed July 1972:

21 floodwater retarding structures
4 drop inlets

Easement Status:

Complete

Acres Flood Plain Protected within Watershed: 3,930

Effectiveness of Project:

No flooding since the project was installed. Reduction of flood damage is high. Streambanks are being sloped so that more efficient farming can be accomplished. Areas previously subject to flooding are now in intensive crops. Pot holes and scour channels have been eliminated. This is one of the best benefitted areas in the Reach III portion of the Washita River. There is recreational use such as fishing and hunting in some of the sites.

Dead Indian-Wildhorse Creek Watershed (Roger Mills County, Oklahoma)

Sponsors: Upper Washita Conservation District

Size: 64,862 acres

Work Plan Approved: October 30, 1957

Estimated Total Cost of Project:

a. Federal Funds	\$ 916,614
b. Other	227,772
Total	<u>\$ 1,144,386</u>

Structural Measures:

Annual Cost	\$ 33,811
Annual Benefit	43,844
Benefit-Cost Ratio	1.30:1

Land Treatment:

a. Percent of Land Adequately Treated	66%
b. Percent of Planned Measures Applied 1-1-72	64%

Watershed Problems:

Floodwater, sediment, and erosion damages to agricultural land.
Interruption of travel on roads.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

11 floodwater retarding structures 1/
1 grade stabilization structure

Structural Measures Installed July 1972:

11 floodwater retarding structures 1/
1 grade stabilization structure

Easement Status:

Complete

Acres Flood Plain Protected within Watershed: 3,207

Effectiveness of Project:

This watershed has provided flood protection against flooding and destruction of crops, land and buildings. It also has provided protection to county roads and bridges. Some sites are being used for recreation. Site 4 has been developed by Forest Service for recreation.

1/ One site which has multi-purpose use (recreation development) was planned as a single purpose structure.

Delaware Creek of Tonkawa Creek (Caddo and Grady Counties, Oklahoma)

Sponsors: South Caddo County Conservation District
Grady County Conservation District

Size: 36,879 acres

Work Plan Approved: April 1952

Estimated Total Cost of Project:

a. Federal Funds	\$ 742,569
b. Other	<u>1,213,590</u>
Total	\$1,956,159

Structural Measures:

Annual Cost	\$ 31,539
Annual Benefit	56,546
Benefit-Cost Ratio	1.79:1

Land Treatment:

a. Percent of Land Adequately Treated	60%
b. Percent of Planned Measures Applied 1-1-72	70%

Watershed Problems:

Floodwater, sediment and scour damages to agricultural land

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

4 floodwater retarding structures
1.0 miles of floodway

Structural Measures Installed July 1972:

0 floodwater retarding structures
0 miles of floodway

Easement Status:

Need all easements

Acres Flood Plain Protected within Watershed: 1,337

East Laterals to Texoma (Johnston and Bryan Counties, Oklahoma)

Sponsors: Johnston County Conservation District
Bryan County Conservation District

Size: 38,062 acres

Work Plan Approved: To be included in planning of Reach IV of Washita River

Fast Runner Creek Watershed (of Cobb Creek) (Caddo County, Oklahoma)

Sponsors: South Caddo County Conservation District

Size: 7,735 acres

Work Plan Approved: January 1957

Estimated Total Cost of Project:

a. Federal Funds	\$ 408,414
b. Other	<u>360,502</u>
Total	\$ 768,916

Structural Measures:

Annual Cost	\$ 17,467
Annual Benefit	23,000
Benefit-Cost Ratio	1.32:1

Land Treatment:

a. Percent of Land Adequately Treated	78%
b. Percent of Planned Measures Applied 1-1-72	82%

Watershed Problems:

Floodwater, sediment, and scour damages to agricultural and non-agricultural land.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

4 floodwater retarding structures
4.5 miles of channel improvement

Structural Measures Installed July 1972:

4 floodwater retarding structures
4.5 miles of channel improvement

Easement Status:

Complete

Acres Flood Plain Protected within Watershed: 1,170

Effectiveness of Project:

This project has prevented overflow of bottom land since completion. There was no flood damage or silt accumulation during the last flood. Structures have provided water for irrigation, wildlife, and recreation. Two structures have remained dry most of the time.

Finn Creek Watershed (Garvin and McClain Counties, Oklahoma)

Sponsors: McClain County Conservation District
Garvin County Conservation District
Town of Maysville
Maysville Municipal Authority
Board of County Commissioners of McClain County

Size: 58,636 acres

Work Plan Approved: June 1951

Estimated Total Cost of Project:

a. Federal Funds	\$ 1,861,696
b. Other	<u>1,314,499</u>
Total	\$ 3,176,195

Structural Measures:

Annual Cost	\$ 92,819
Annual Benefit	346,121
Benefit-Cost Ratio	3.73:1

Land Treatment:

a. Percent of Land Adequately Treated	81%
b. Percent of Planned Measures Applied 1-1-72	82%

Watershed Problems:

Floodwater, sediment, and scour damages to agricultural land.
Interruption of travel. Need for municipal water supply and recreational development.

Project Purposes:

Flood prevention
Municipal Water Supply
Recreational development

Structural Measures Planned July 1972:

1 multipurpose structure with flood prevention, municipal and recreation storage and recreation facilities
33 floodwater retarding structures
1 recreational development

Structural Measures Installed or Contracted July 1972:

1 multipurpose structure with flood prevention, municipal and recreation storage and recreation facilities
31 floodwater retarding structures

Easement Status:

Need a total of 7 easements on sites 1 and 15.

Acres Flood Plain Protected within Watershed: 5,737

Effectiveness of Project:

Wiley Post Memorial Site 34 is a multipurpose structure (flood prevention, municipal, and recreation) which has just been completed. Recreational facilities will be installed. State highway officials acknowledged that a reduction in size of bridge at lower end of watershed was possible as a result of the project installation. Four sites furnish irrigation water and one site furnishes water for a small oil refinery. Scour damages and pot holes are being eliminated in fields now that floods are no longer prevalent. Land leveling and improvement is taking place all up and down the flood plain area. This is one of the better benefitted areas in Reach III area of the Washita River.

Ft. Cobb Laterals Watershed (Caddo County, Oklahoma) Included in
Supplemental Plan of Reach II Segment of Washita River Watershed

Sponsors: South Caddo County Conservation District

Size: 77,520 acres

Work Plan Approved: July 1, 1968

Estimated Total Cost of Project:

a. Federal Funds	\$ 1,496,215
b. Other	<u>2,565,558</u>
Total	\$ 4,061,773

Structural Measures:

Annual Cost	\$ 64,342
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Annual Benefit	94,634
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Benefit-Cost Ratio	1.47:1
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Received benefits from flood plain of Washita River in Reach II area

Land Treatment:

a. Percent of Land Adequately Treated	77%
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b. Percent of Planned Measures Applied 1-1-72	82%
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Watershed Problems:

Floodwater, sediment, and scour damages to agricultural and non-agricultural land.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

13 floodwater retarding structures

Structural Measures Installed or Contracted July 1972:

4 floodwater retarding structures

Easement Status:

3 sites cleared

19 easements needed on 6 sites

Acres Flood Plain Protected within Watershed: 684

Effectiveness of Project:

None of these structures have been in place long enough to have any effect downstream.

Glasses Creek Watershed (Marshall County, Oklahoma)

Sponsors: Marshall County Conservation District

Size: 47,731 acres

Work Plan Approved: To be included in planning of Reach IV of Washita River

Gyp Creek Watershed (Washita and Custer Counties, Oklahoma) Included in
Supplemental Plan of Reach II Segment of Washita River Watershed

Sponsors: Mountain View Conservation District
Washita County Conservation District
Upper Washita Conservation District
Deer Creek Conservation District

Size: 71,828 acres

Work Plan Approved: July 1, 1968

Estimated Total Cost of Project:

a. Federal Funds	\$ 492,111
b. Other	<u>2,257,952</u>
Total	\$ 2,750,063

Structural Measures:

Annual Cost	\$ 17,250
Annual Benefit	24,695
Benefit-Cost Ratio	1.43:1

Received benefits from flood plain of Washita River in Reach II area.

Land Treatment:

a. Percent of Land Adequately Treated	79%
b. Percent of Planned Measures Applied 1-1-72	84%

Watershed Problems:

Floodwater, sediment, and scour damages to agricultural and non-agricultural land.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

2 floodwater retarding structures

Structural Measures Installed July 1972:

0 floodwater retarding structures

Easement Status:

Complete

Acres Flood Plain Protected within Watershed: 82

Effectiveness of Project:

No sites constructed

Ionine Creek Watershed (Caddo and Grady Counties, Oklahoma)

Sponsors: Grady County Conservation District
South Caddo County Conservation District

Size: 54,521 acres

Work Plan Approved: May 3, 1956

Estimated Total Cost of Project:

a. Federal Funds	\$ 1,540,946
b. Other	846,048
Total	<u>\$ 2,386,994</u>

Structural Measures:

Annual Cost	\$ 70,455
Annual Benefit	162,007
Benefit-Cost Ratio	2.30:1

Land Treatment:

a. Percent of Land Adequately Treated	72%
b. Percent of Planned Measures Applied 1-1-72	72%

Watershed Problems:

Floodwater, sediment and erosion damages to agricultural and non-agricultural land.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

- 17 floodwater retarding structures
- 2.3 miles of channel improvement
- 3 grade stabilization structures
- Gully stabilization
- Critical area treatment

Structural Measures Installed July 1972:

- 2 grade stabilization structures
- Gully Stabilization
- Critical area treatment

Easement Status:

All easements have expired except one gully stabilization and one grade stabilization structure.

Acres Flood Plain Protected within Watershed: 3,934

Effectiveness of Project:

The grade stabilization structures and gully stabilization have effectively reduced the sediment on bottom land below the structures.

Kickapoo Sandy Creek Watershed (Garvin and Murray Counties, Oklahoma)

Sponsors: Murray County Conservation District
Garvin County Conservation District

Size: 41,662 acres

Work Plan Approved: November 22, 1961

Estimated Total Cost of Project:

a. Federal Funds	\$ 1,239,395
b. Other	800,369
Total	<u>\$ 2,039,764</u>

Structural Measures:

Annual Cost	\$ 56,788
Annual Benefit	73,765
Benefit-Cost Ratio	1.30:1

Land Treatment:

a. Percent of Land Adequately Treated	80%
b. Percent of Planned Measures Applied 1-1-72	80%

Watershed Problems:

Floodwater, sediment, and scour damages to agricultural land.
Damages to roads and bridges. Interruption of travel.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

22 floodwater retarding structures
12.4 miles of channel improvement

Structural Measures Installed July 1972:

17 floodwater retarding structures
7.2 miles of channel improvement

Easement Status:

Five floodwater retarding structures and 5.2 miles of channel improvement remain to be built with 11 easements needed.

Acres Flood Plain Protected within Watershed: 5,680

Effectiveness of Project:

When the October 1970 intensive storm of 10 inches in 24 hours fell, all structures and channels functioned as planned and all emergency spillways that flowed were orderly. These structures and channels enabled farm drains to flow orderly into channels that formerly prohibited complete drainage of poorly drained bottom land benefitted areas. Highway and railroad rights-of-way formerly flooded did not receive damage. There is recreational use such as fishing and hunting in some of the sites.

Line Creek Watershed (Caddo and Grady Counties, Oklahoma)

Sponsors: Grady County Conservation District
South Caddo County Conservation District

Size: 50,516 acres

Work Plan Approved: In process of planning with Reach III of Washita
River

Little Washita River Watershed (Grady, Comanche, and Caddo Counties,
Oklahoma)

Sponsors: Grady County Conservation District
Comanche County Conservation District
South Caddo County Conservation District

Size: 150,808 acres

Work Plan Approved: June 8, 1967

Estimated Total Cost of Project:

a. Federal Funds	\$ 3,854,032
b. Other	<u>1,669,946</u>
Total	\$ 5,523,978

Structural Measures:

Annual Cost	\$ 170,453
Annual Benefit	516,938
Benefit-Cost Ratio	3.03:1

Land Treatment:

a. Percent of Land Adequately Treated	72%
b. Percent of Planned Measures Applied 1-1-72	71%

Watershed Problems:

Floodwater, sediment, and erosion damages to agricultural and non-agricultural land. Interruption of travel on roads.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

49 floodwater retarding structures
5.9 miles of channel improvement

Structural Measures installed or Contracted July 1972:

20 floodwater retarding structures

Easement Status:

6 sites cleared and 23 sites need 66 easements. Several easements are needed on channel improvement.

Acres Flood Plain Protected within Watershed: 9,316

Effectiveness of Project:

There are 19 floodwater detention reservoirs installed. Flood damages are reduced below individual sites but not enough drainage area is controlled at present to significantly reduce flood damages on the mainstem.

Mansville Laterals Watershed (Carter, Johnston, and Marshall Counties,
Oklahoma)

Sponsors: Carter County Conservation District
Johnston County Conservation District
Marshall County Conservation District

Size: 56,064 acres

Work Plan Approved: To be included in planning of Reach IV of Washita
River

Maysville Laterals Watershed (Garvin County, Oklahoma)

Sponsors: Garvin County Conservation District
Town of Maysville

Size: 44,234 acres

Work Plan Approved: August 21, 1963

Estimated Total Cost of Project:

a. Federal Funds	\$ 1,268,211
b. Other	553,218
Total	<u>\$ 1,821,429</u>

Structural Measures:

Annual Cost	\$ 58,063
Annual Benefit	170,991
Benefit-Cost Ratio	2.94:1

Land Treatment:

a. Percent of Land Adequately Treated	70%
b. Percent of Planned Measures Applied 1-1-72	74%

Watershed Problems:

Floodwater and sediment damages to agricultural land, roads, residences, churches, and business establishments. Erosion damage to agricultural and non-agricultural land.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

28 floodwater retarding structures
3.5 miles of channel improvement

Structural Measures Installed or Contracted July 1972:

11 floodwater retarding structures

Easement Status:

21 easements needed on 12 sites. Also easements needed on channel improvement

Acres Flood Plain Protected within Watershed: 6,095

Effectiveness of Project:

Control has been effective below the individual structures built. Additional sites are in the process of being built.

Mill Creek Watershed (Johnston and Murray Counties, Oklahoma)

Sponsors: Johnston County Conservation District
Murray County Conservation District

Size: 77,739 acres

Work Plan Approved: September 1949

Estimated Total Cost of Project:

a. Federal Funds	\$ 517,570
b. Other	497,779
Total	<u>\$ 1,015,349</u>

Structural Measures:

Annual Cost	\$ 29,287
Annual Benefit	43,164
Benefit-Cost Ratio	1.47:1

Land Treatment:

a. Percent of Land Adequately Treated	71%
b. Percent of Planned Measures Applied 1-1-72	74%

Watershed Problems:

Floodwater, sediment, and scour damages to agricultural land.
Damages to roads and bridges. Interruption of travel.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

18 floodwater retarding structures
18 drop inlets
17 gully plugs
4.2 miles of floodwater diversions

Structural Measures Installed July 1972:

18 floodwater retarding structures
18 drop inlets
17 gully plugs
4.2 miles of floodwater diversions

Easement Status:

Complete

Acres Flood Plain Protected within Watershed: 4,181

Effectiveness of Project:

The flood plain and farmsteads were protected by the project during the 1970 storm of 12 inches of rainfall in 24 hours. One benefitted landowner stated that he would have lost all of his buildings except the house had it not been for the structural measures above. Most of the emergency spillways flowed during this storm.

Nine Mile Creek Watershed (Roger Mills County, Oklahoma)

Sponsors: Upper Washita Conservation District

Size: 54,315 acres

Work Plan Approved: November 1955

Estimated Total Cost of Project:

a. Federal Funds	\$ 728,533
b. Other	284,870
Total	<u>\$1,013,403</u>

Structural Measures:

Annual Cost	\$ 27,904
Annual Benefit	37,885
Benefit-Cost Ratio	1.36:1

Land Treatment

a. Percent of Land Adequately Treated	63%
b. Percent of Planned Measures Applied 1-1-72	69%

Watershed Problems:

Floodwater, scour, and sediment damages to agricultural land.
Interruption of travel on roads.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

18 floodwater retarding structures

Structural Measures Installed July 1972:

18 floodwater retarding structures

Easement Status

Complete

Acres Flood Plain Protected within Watershed: 1,710

Effectiveness of Project:

In May 1972 a 5 inch rain fell in 4 hours on the lower one-third of this watershed. No flooding occurred but would have if structures had not been in place. Losses from floods have been reduced to the cost of repairing water gaps. Sites 3, 7, 8, 9, 11 and 18 are used for overnight camping.

Oak Creek Watershed (Washita and Kiowa Counties, Oklahoma)

Sponsors: Washita County Conservation District
Mountain View Conservation District

Size: 46,394 acres

Work Plan Approved: June 26, 1963

Estimated Total Cost of Project:

a. Federal Funds	\$ 1,084,013
b. Other	<u>1,519,464</u>
Total	\$ 2,603,477

Structural Measures:

Annual Cost	\$ 52,681
Annual Benefit	86,535
Benefit-Cost Ratio	1.64:1

Land Treatment:

a. Percent of Land Adequately Treated	65%
b. Percent of Planned Measures Applied 1-1-72	70%

Watershed Problems:

Floodwater, sediment and scour damages to agricultural land.
Damages to roads and bridges. Interruption of travel. No
watershed fish and wildlife facilities open for the public
within the area.

Project Purposes:

Flood prevention
Public fish and wildlife development

Structural Measures Planned July 1972:

- 1 multipurpose structure with flood prevention and fish and wildlife storage
- 10 floodwater retarding structures
- Duck marsh and facilities
- 1 grade stabilization structure
- 2 critical areas treatment

Structural Measures Installed July 1972:

- 1 multipurpose structure with flood prevention and fish and wildlife storage
- 10 floodwater retarding structures
- Duck Marsh and facilities
- 1 grade stabilization structure
- 2 critical areas treatment

Easement Status:

Complete

Acres Flood Plain Protected within Watershed: 1,471

Effectiveness of Project:

May 3 to May 7, 1969, official rainfall measurement at Cordell was 8.21 inches. Unofficial reports ranged from 8 inches to 14 inches. Intensity averaged 6 inches in 4 hours. No flooding occurred on the flood plain. There were no damages to crops or livestock below structures. Damage did occur above structures. Four thousand pounds of catfish are being raised in cages on site 2. Site 5 is open for public fishing. About 200 acres are being irrigated from stream channel below structures. Overnight camping is permitted on site 2.

Oil Creek Watershed (Carter, Johnston, and Murray Counties, Oklahoma)

Sponsors: Carter County Conservation District
Johnston County Conservation District
Murray County Conservation District

Size: 40,762 acres

Work Plan Approved: To be included in planning of Reach IV of Washita
River

Owl Creek Watershed (Garvin and McClain Counties, Oklahoma)

Sponsors: Garvin County Conservation District
McClain County Conservation District

Size: 19,545 acres

Work Plan Approved: June 1951

Estimated Total Cost of Project:

a. Federal Funds	\$ 364,430
b. Other	<u>136,038</u>
Total	\$ 500,468

Structural Measures:

Annual Cost	\$ 14,443
Annual Benefit	82,312
Benefit-Cost Ratio	5.70:1

Land Treatment:

a. Percent of Land Adequately Treated	81%
b. Percent of Planned Measures Applied 1-1-72	84%

Watershed Problems:

Floodwater, sediment, and erosion damage to agricultural and non-agricultural land. Interruption of travel.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

15 floodwater retarding structures

Structural Measures Installed July 1972:

15 floodwater retarding structures

Easement Status:

Complete

Acres Flood Plain Protected within Watershed: 1,871

Effectiveness of Project:

All flood prevention structures have been installed and the reduction of flood damage is great. More control is needed below Paoli, although flooding of Highway 77 has been reduced drastically. During a storm of May 17 and 18, 1957, the floodwater retarding structures in place were credited with reduction of floodwater and sediment damage by 70 percent. There is some recreational use such as fishing and hunting in some sites.

Panther Creek Watershed (Custer County, Oklahoma)

Sponsors: Upper Washita Conservation District

Size: 47,216 acres

Work Plan Approved: December 1956

Estimated Total Cost of Project:

a. Federal Funds	\$ 209,233
b. Other	<u>248,326</u>
Total	\$ 457,559

Structural Measures:

Annual Cost	\$ 6,467
Annual Benefit	22,710
Benefit-Cost Ratio	3.51:1

Land Treatment:

a. Percent of Land Adequately Treated	60%
b. Percent of Planned Measures Applied 1-1-72	65%

Watershed Problems:

Floodwater, sediment, and erosion damages to agricultural and non-agricultural land.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

6 floodwater retarding structures

Structural Measures Installed July 1972:

6 floodwater retarding structures

Easement Status:

Complete

Acres Flood Plain Protected within Watershed: 1,050

Effectiveness of Project:

In August 1970 a 5 to 6 inch rain fell in 5 to 5½ hours in this watershed. No flooding occurred. The structures reduced the amount of overflow to less than 50 acres after heavy rains.

Peavine Creek Watershed (McClain and Garvin Counties, Oklahoma)

Sponsors: McClain County Conservation District
Garvin County Conservation District

Size: 38,645 acres

Work Plan Approved: June 1951

Estimated Total Cost of Project:

a. Federal Funds	\$ 604,839
b. Other	<u>390,851</u>
Total	\$ 995,690

Structural Measures:

Annual Cost	\$ 16,139
Annual Benefit	49,381
Benefit-Cost Ratio	3.06:1

Land Treatment:

a. Percent of Land Adequately Treated	77%
b. Percent of Planned Measures Applied 1-1-72	79%

Watershed Problems:

Floodwater, sediment, and scour damages to agricultural land.
Interruption of travel.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

10 floodwater retarding structures

Structural Measures Installed July 1972:

10 floodwater retarding structures

Easement Status:

Complete

Acres Flood Plain Protected within Watershed: 4,500

Effectiveness of Project:

Very little flooding has occurred in this watershed since installation of project. There is need for additional protection in an area previously considered for structures. A record storm of 11 inches in 24 hours occurred in October 1970 causing all structures to discharge through the emergency spillway, which demonstrated the value of each structure. Reduction in flood damage has been outstanding. There is recreational use in some of the sites such as hunting and fishing.

Pennington Creek Watershed (Pontotoc, Johnston, and Murray Counties,
Oklahoma)

Sponsors: Pontotoc County Conservation District
Johnston County Conservation District
Murray County Conservation District

Size: 82,605 acres

Work Plan Approved: February 1951

Estimated Total Cost of Project:

a. Federal Funds	\$ 346,459
b. Other	279,621
Total	<u>\$ 626,080</u>

Structural Measures:

Annual Cost	\$ 3,905
Annual Benefit	6,501
Benefit-Cost Ratio	1.66:1

Land Treatment:

a. Percent of Land Adequately Treated	73%
b. Percent of Planned Measures Applied 1-1-72	75%

Watershed Problems:

Floodwater, sediment, and scour damages to agricultural land.
Damages to roads and bridges. Interruption of travel.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

3 floodwater retarding structures

Structural Measures Installed July 1972:

3 floodwater retarding structures

Easement Status:

Complete

Acres Flood Plain Protected within Watershed: 2,222

Effectiveness of Project:

Functions as planned with the flood plain being protected.

Quartermaster Creek Watershed (Roger Mills, Custer, and Dewey
Counties, Oklahoma)

Sponsors: Upper Washita Conservation District
Dewey County Conservation District

Size: 123,377 acres

Work Plan Approved: February 5, 1958

Estimated Total Cost of Project:

a. Federal Funds	\$ 1,795,686
b. Other	<u>224,646</u>
Total	\$ 2,020,332

Structural Measures:

Annual Cost	\$ 72,317
Annual Benefit	101,494
Benefit-Cost Ratio	1.40:1

Land Treatment:

a. Percent of Land Adequately Treated	68%
b. Percent of Planned Measures Applied 1-1-72	70%

Watershed Problems:

Floodwater, sediment, and scour damages to agricultural land.
Damages to roads, bridges, and railroads. Interruption of
travel.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

37 floodwater retarding structures
5 drop inlets

Structural Measures Installed July 1972:

36 floodwater retarding structures
5 drop inlets

Easement Status:

No easements obtained on one site.

Acres Flood Plain Protected within Watershed: 5,859

Effectiveness of Project:

In April 1972 a 3 inch rain fell in 6 hours in this watershed.
Minor flooding occurred on 200 acres, but without structures,
up to 1500 acres would have been flooded. Losses from floods
have been reduced to the cost of repairing water gaps. Irrigation
water is being sold from sites 22 and 23. Landowners are irrigating
150 acres from sites 28, 29, 18, 17, and 15. Overnight camping
is done on sites 1A, 18, 22, 23, 28, and 29. Permission to fish
can be obtained from landowners on the majority of these sites.

Rainy Mountain Creek Watershed (Washita, Kiowa, and Comanche Counties,
Oklahoma)

Sponsors: Mountain View Conservation District
Kiowa County Conservation District
Washita County Conservation District

Size: 209,959 acres

Work Plan Approved: August 29, 1960

Estimated Total Cost of Project:

a. Federal Funds	\$ 3,686,725
b. Other	<u>7,229,595</u>
Total	\$10,916,320

Structural Measures:

Annual Cost	\$ 176,512
Annual Benefit	388,378
Benefit-Cost Ratio	2.20:1

Land Treatment:

a. Percent of Land Adequately Treated	80%
b. Percent of Planned Measures Applied 1-1-72	85%

Watershed Problems:

Floodwater, sediment, and scour damages to agricultural land.
Damages to the town of Mountain View. Damages to railroads,
roads and bridges. Interruption of travel.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

41 floodwater retarding structures
17 miles of channel improvement

Structural Measures Installed or Contracted July 1972:

25 floodwater retarding structures

Easement Status:

92 easements are needed on 16 sites

Acres Flood Plain Protected within Watershed: 18,262

Effectiveness of Project:

On September 19 and 20, 1965, rains occurred over the watershed ranging from 2 inches in the southern part to 9 inches in the northern part. An official 7.56 inches were recorded at Hobart. With 17 of the 41 structures in place, there was a reduction in flood damages of about 22%. With the complete project the damages would have been reduced by about 70%. When heavy rains (7 inches) occurred on Rainy Mountain Creek in September 1971, Sites 29 and 29A prevented the creek from flooding at Mountain View. Both sites 29 and 29A were dry at the time and both structures filled with this one rain. They have a combined drainage area of 18,602 acres. Rainy Mountain Creek was bank full at Mountain View. The additional water held back by these sites would have caused the creek to overflow. Site 29A has 126 surface acres when full with 558 acre-feet of water. About 175 acres of cropland and 150 acres of tame pasture are being irrigated from these sites. Site 38 is being leased by a club for fishing. All other structures are open to fishing with permission of landowners. A Kiowa County Commissioner has stated publicly on numerous occasions that due to the protection of roads

and bridges by these structures, he has had more money available for hard surface roads that would have been spent on repair.

Roaring Creek Watershed (Grady County, Oklahoma)

Sponsors: Grady County Conservation District

Size: 67,995 acres

Work Plan Approved: March 15, 1961

Estimated Total Cost of Project:

a. Federal Funds	\$ 2,200,154
b. Other	807,009
Total	<u>\$ 3,007,163</u>

Structural Measures:

Annual Cost	\$ 99,624
Annual Benefit	276,473
Benefit-Cost Ratio	2.78:1

Land Treatment:

a. Percent of Land Adequately Treated	72%
b. Percent of Planned Measures Applied 1-1-72	74%

Watershed Problems:

Floodwater and sediment damages to agricultural land, roads, oil field installations, residences, and business establishments in Alex. Erosion damage to agricultural land. Interruption of travel. Inadequate channel capacity.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

- 33 floodwater retarding structures
- 1.0 miles of channel improvement
- 7 drop inlets
- 6 critical area treatment

Structural Measures Installed July 1972:

- 32 floodwater retarding structures
- 7 drop inlets
- 6 critical areas

Easement Status:

Easements on channel improvement area are needed

Site 6 - pipeline problems

Acres Flood Plain Protected within Watershed: 6,207

Effectiveness of Project:

Landowners are real impressed with the effectiveness of the project. Many levees are being removed now that they are convinced flooding is reduced. Sandbars of deposition are being placed in cultivation, etc. Many sites are providing fishing for the area.

Rock Creek Watershed (Murray, Garvin, and Pontotoc Counties, Oklahoma)

Sponsors: Pontotoc County Conservation District
Garvin County Conservation District
Murray County Conservation District

Size: 109,043 acres

Work Plan Approved: August 14, 1959

Estimated Total Cost of Project:

a. Federal Funds	\$ 943,614
b. Other	644,628
Total	<u>\$ 1,588,242</u>

Structural Measures:

Annual Cost	\$ 39,550
Annual Benefit	60,990
Benefit-Cost Ratio	1.54:1

Land Treatment:

a. Percent of Land Adequately Treated	71%
b. Percent of Planned Measures Applied 1-1-72	72%

Watershed Problems:

Floodwater, sediment, and scour damages to agricultural land.
Damages to roads and bridges. Damages to non-agricultural land.
Interruption of travel.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

18 floodwater retarding structures

Structural Measures Installed July 1972:

17 floodwater retarding structures

Easement Status:

There are 3 easements needed to complete the easements for site 4.

Acres Flood Plain Protected within Watershed: 3,587

Effectiveness of Project:

The 1970 flood of 11.73 inches of rainfall in 24 hours caused some flooding in Sulphur; however, the floodwater retarding structures reduced the depth of flooding to 5 feet. Although there were \$839,000 damages during this flood, it is estimated that \$2,000,000 damages would have occurred had the structures not been in place. Flood plain areas receiving protection are being improved with improved crops and pasture.

Round Creek Watershed (Garvin and Grady Counties, Oklahoma)

Sponsors: Grady County Conservation District
Garvin County Conservation District

Size: 46,702 acres

Work Plan Approved: March 4, 1957

Estimated Total Cost of Project:

a. Federal Funds	\$ 421,652
b. Other	391,937
Total	<u>\$ 813,589</u>

Structural Measures:

Annual Cost	\$ 19,074
Annual Benefit	139,800
Benefit-Cost Ratio	7.33:1

Land Treatment:

a. Percent of Land Adequately Treated	73%
b. Percent of Planned Measures Applied 1-1-72	76%

Watershed Problems:

Floodwater, sediment, and erosion damages on agricultural and non-agricultural land.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

9 floodwater retarding structures

Structural Measures Installed July 1972:

9 floodwater retarding structures

Easement Status:

Complete

Acres Flood Plain Protected within Watershed: 2,857

Effectiveness of Project:

Functioning as planned. There hasn't been any flooding since installation of project. Several sites are providing fishing and hunting for this area, especially sites 2 and 3.

Rush Creek Watershed (Grady, Garvin, and Stephens Counties, Oklahoma)

Sponsors: Grady County Conservation District
Garvin County Conservation District
Stephens County Conservation District
City of Marlow
City of Rush Springs

Size: 191,557 acres

Work Plan Approved: June 11, 1964

Estimated Total Cost of Project:

a. Federal Funds	\$ 3,011,958
b. Other	<u>2,078,774</u>
Total	\$ 5,090,732

Structural Measures:

Annual Cost	\$ 137,981
Annual Benefit	362,885
Benefit-Cost Ratio	2.63:1

Land Treatment:

a. Percent of Land Adequately Treated	75%
b. Percent of Planned Measures Applied 1-1-72	74%

Watershed Problems:

Floodwater, sediment, and scour damages to agricultural land.
Damages to roads, bridges, urban, and business properties.
Interruption of travel. Need for municipal water supply for the City of Marlow.

Project Purposes:

Flood prevention
Municipal Water Supply

Structural Measures Planned July 1972:

1 multipurpose structure with flood prevention and municipal storage
48 floodwater retarding structures
1.5 miles of channel improvement
3 critical areas treatment
6 grade stabilization structures

Structural Measures Installed July 1972:

1 multipurpose structure with flood prevention and municipal storage
43 floodwater retarding structures
5 grade stabilization structures

Easement Status:

One site is clear. Four sites remain to be built where pipelines are a problem. There are eleven easements needed on three of these sites.

Acres Flood Plain Protected within Watershed: 14,314

Effectiveness of Project:

The lower flood plain, which includes the City of Pauls Valley, has not been flooded since 1950. The installation of all floodwater retarding structures except 5 sites has effectively controlled runoff. Much irrigation is being done from the sediment pools of these sites, especially on peanuts. A municipal site at the top of the watershed is being used extensively for recreation. Fishing and hunting on the site is prevalent. Site 49 has helped prevent flooding of U. S. Highway 81. At least 8 sites are furnishing irrigation water.

Several sites are being used for fishing. Sites 26 and 37-39B are being used as a source of irrigation water.

Saddle Mountain Creek Watershed (Kiowa, Caddo, and Comanche Counties,
Oklahoma)

Sponsors: Mountain View Conservation District
South Caddo County Conservation District

Size: 72,420 acres

Work Plan Approved: July 1, 1968

Estimated Total Cost of Project:

a. Federal Funds	\$ 1,067,185
b. Other	<u>2,356,464</u>
Total	\$ 3,423,649

Structural Measures:

Annual Cost	\$ 45,112
Annual Benefit	88,412
Benefit-Cost Ratio	1.96:1

Land Treatment:

a. Percent of Land Adequately Treated	81%
b. Percent of Planned Measures Applied 1-1-72	86%

Watershed Problems:

Floodwater, sediment and scour damages to agricultural land.
Interruption of travel.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

14 floodwater retarding structures
1 grade stabilization structure

Structural Measures Installed or Contracted July 1972:

7 floodwater retarding structures

Easement Status:

3 sites are clear
9 easements are needed on 4 sites

Acres Flood Plain Protected within Watershed: 4,665

Effectiveness of Project:

Alfalfa is being irrigated from site 4, Saddle Mountain Creek.
Site 6 has been leased by a club for fishing. Fifty acres
of Bermudagrass are being irrigated from this site. No
flooding has occurred in the last 3 years on Saddle Mountain
Creek. All other sites are open for fishing by permission
from landowners. Two hundred twenty acres are being irrigated.

Salt Creek Watershed (Grady County, Oklahoma)

Sponsors: Grady County Conservation District

Size: 63,265 acres

Work Plan Approved: In process of planning with Reach III of Washita River

Sandstone Creek Watershed (Roger Mills and Beckham Counties, Oklahoma)

Sponsors: Upper Washita Conservation District

Size: 65,013 acres

Work Plan Approved: November 1949

Estimated Total Cost of Project:

a. Federal Funds	\$ 1,860,452
b. Other	<u>284,727</u>
Total	\$ 2,145,179

Structural Measures:

Annual Cost	\$ 56,591
Annual Benefit	77,323
Benefit-Cost Ratio	1.37:1

Land Treatment:

a. Percent of Land Adequately Treated	71%
b. Percent of Planned Measures Applied 1-1-72	69%

Watershed Problems:

Floodwater, scour, and sediment damages to agricultural land.
Interruption of travel on roads. Road and bridge damage.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

24 floodwater retarding structures
1.7 miles of channel improvement
18 grade stabilization structures

Structural Measures Installed July 1972:

24 floodwater retarding structures
1.7 miles of channel improvement
18 grade stabilization structures

Easement Status:

Complete

Acres Flood Plain Protected within Watershed: 4,700

Effectiveness of Project:

Protection has been furnished against flooding in the Sandstone Watershed. It has prevented damage to crops, land and buildings. During the storm of May 25 and 26, 1959, which ranged from 6 to 8 inches, the project installed reduced the damages by an estimate of 84 percent. It has also provided some types of recreation. Sites 16 and 17 are open for recreation by permission of landowner. Land is being irrigated from Site 16A. Sixty acres are being irrigated from Site 1. Site 1 is also being used for overnight camping.

Sergeant Major Creek Watershed (Roger Mills County, Oklahoma)

Sponsors: Upper Washita Conservation District

Size: 19,684 acres

Work Plan Approved: March 1953

Estimated Total Cost of Project:

a. Federal Funds	\$ 396,098
b. Other	<u>171,175</u>
Total	\$ 567,273

Structural Measures:

Annual Cost	\$ 14,643
Annual Benefit	19,004
Benefit-Cost Ratio	1.30:1

Land Treatment:

a. Percent of Land Adequately Treated	61%
b. Percent of Planned Measures Applied 1-1-72	60%

Watershed Problems:

Floodwater, scour, and sediment damage to agricultural land.

Interruption of travel on roads and railroads.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

6 floodwater retarding structures 1/
5 grade stabilization structures
12 miles of floodwater diversions

Structural Measures Installed July 1972:

6 floodwater retarding structures 1/
5 grade stabilization structures
12 miles of floodwater diversions

Easement Status:

Complete

Acres Flood Plain Protected within Watershed: 1,503

Effectiveness of Project:

In June 1971 approximately 5 inches of rain fell in a two mile square in the Sergeant Major Watershed in the drainage area of Sites 3 and 4. These sites filled above the principal spillway but no flooding occurred below the structures and damage was held to a minimum. In addition to flood prevention, Cheyenne is getting its water supply from Site 4.

1/ One site which has multi-purpose use (municipal water supply) was planned as a single purpose structure.

Soldier Creek Watershed (Beckham, Custer, and Washita Counties,
Oklahoma)

Sponsors: Washita County Conservation District
Upper Washita Conservation District
North Fork of Red River Conservation District

Size: 44,748 acres

Work Plan Approved: February 26, 1960

Estimated Total Cost of Project:

a. Federal Funds	\$ 648,517
b. Other	<u>1,420,799</u>
Total	\$ 2,069,316

Structural Measures:

Annual Cost	\$ 26,529
Annual Benefit	65,738
Benefit-Cost Ratio	2.48:1

Land Treatment:

a. Percent of Land Adequately Treated	65%
b. Percent of Planned Measures Applied 1-1-72	65%

Watershed Problems:

Floodwater, sediment, and scour damages to agricultural land.
Damages to railroads, County and State roads, and bridges.
Interruption of travel.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

12 floodwater retarding structures

Structural Measures Installed July 1972:

12 floodwater retarding structures

Easement Status:

Complete

Acres Flood Plain Protected within Watershed: 1,530

Effectiveness of Project:

There was a 4 inch rain in 10 hours in August 1969 with only minor flood plain damage where this creek enters the Washita River below Foss Dam. On May 11, 1972, a 3 inch rain fell over a 6 hour period on a small portion of the watershed that could have caused minor flooding at the entrance to the Washita River if structures were not in place.

South Clinton Laterals Watershed (Custer and Washita Counties, Oklahoma)

Sponsors: Upper Washita Conservation District

Size: 50,817 acres

Work Plan Approved: December 4, 1956

Estimated Total Cost of Project:

a. Federal Funds	\$1,137,746
b. Other	<u>1,701,423</u>
Total	\$2,839,169

Structural Measures:

Annual Cost	\$ 50,860
Annual Benefit	66,417
Benefit-Cost Ratio	1.31:1

Land Treatment:

a. Percent of Land Adequately Treated	65%
b. Percent of Planned Measures Applied 1-1-72	75%

Watershed Problems:

Floodwater, sediment, and scour damages to agricultural land.
Damages to roads, bridges, and railroads. Interruption of travel.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

17 floodwater retarding structures
3.2 miles of channel improvement
3 grade stabilization structures

Structural Measures Installed July 1972:

10 floodwater retarding structures
3 grade stabilization structures

Easement Status:

2 sites are clear. One site has no easements obtained. Eleven easements are needed on 4 sites. One easement is needed on channel improvement.

Acres Flood Plain Protected within Watershed: 1,395

Effectiveness of Project:

Several local heavy rainstorms have fallen above some of these structures. No damage has occurred below these structures. Approximately 125 people use these sites for fishing.

Spring Creek Watershed (Caddo County, Oklahoma) Included in Supplemental Plan of Reach II Segment of Washita River Watershed

Sponsors: South Caddo County Conservation District
City of Chickasha

Size: 53,492 acres

Work Plan Approved: July 10, 1957

Estimated Total Cost of Project:

a. Federal Funds	\$ 546,586
b. Other	<u>3,234,330</u>
Total	\$3,780,916

Structural Measures:

Annual Cost	\$ 84,609
Annual Benefit	202,063
Benefit-Cost Ratio	2.39:1

Land Treatment:

a. Percent of Land Adequately Treated	75%
b. Percent of Planned Measures Applied 1-1-72	85%

Watershed Problems:

Floodwater, sediment, and scour damages to agricultural and non-agricultural land. Need for municipal water supply for Chickasha, Oklahoma. Inadequate channel capacity.

Project Purposes:

Flood prevention
Municipal water supply

Structural Measures Planned July 1972:

1 multipurpose structure with flood prevention and municipal storage
1 floodwater retarding structure
3.6 miles of channel improvement
3 grade stabilization structures

Structural Measures Installed July 1972:

1 multipurpose structure with flood prevention and municipal storage
0 floodwater retarding structures
0 miles of channel improvement
2 grade stabilization structures

Easement Status:

Need easement on channel improvement only
Site 2 cleared

Acres Flood Plain Protected within Watershed: 1,442

Effectiveness of Project:

Land treatment measures have effectively controlled erosion. Site 1 has reduced flood and sediment damage below. Also it has provided supplemental water supply to Chickasha, and provided fishing, camping, hunting and other water recreation for a large area nearby.

Sugar Creek Watershed (Caddo and Canadian Counties, Oklahoma)

Sponsors: South Caddo County Conservation District
North Caddo County Conservation District

Size: 189,076 acres

Work Plan Approved: April 23, 1959

Estimated Total Cost of Project:

a. Federal Funds	\$ 6,453,131
b. Other	<u>6,175,076</u>
Total	\$ 12,628,207

Structural Measures:

Annual Cost	\$ 276,396
Annual Benefit	600,242
Benefit-Cost Ratio	2.17:1

Land Treatment:

a. Percent of Land Adequately Treated	70%
b. Percent of Planned Measures Applied 1-1-72	80%

Watershed Problems:

Floodwater, sediment, and scour damages to agricultural land.

Damages to roads and bridges. Interruption of travel.

Project Purposes:

Flood Prevention

Structural Measures Planned July 1972:

- 46 floodwater retarding structures
- 21.3 miles of channel improvement
- 5 drop inlets
- 11 gully stabilization structures

Structural Measures Installed or Contracted July 1972:

- 45 floodwater retarding structures
- 18.8 miles of channel improvement
- 3 drop inlets
- 10 gully stabilization structures

Easement Status:

All easements obtained on remaining structures to be built

Acres Flood Plain Protected within Watershed: 13,419

Effectiveness of Project:

On September 20, 1965, rainfall ranging from 1 to 8 inches fell on the watershed. With 25 of the 46 structures in place, the estimated flood damage was reduced by 18%. With the completed project, the flood damages would have been reduced by 47%. Recent smaller rains have been completely controlled as far as flooding is concerned. Although much land treatment has been accomplished, much remains to be done especially control of roadside erosion. Vegetation and revegetation has continued actively. Approximately 4,000 acres have been planted to grass annually. There are no organized use of structures except for one site which is used by a club. Visitors as well as local residents put heavy pressure on the sites for recreation such as hunting, fishing, swimming, and outings. Several sites are used for irrigating 1,255 acres. Sugar Creek bank stabilization after being severely damaged has progressed in stabilization at a rapid rate. Natural vegetation has done most of the protection to the bank, where it was supplemented with bank stabilization structures such as fences, jacks, and drop structures.

Tonkawa Creek Watershed (Caddo County, Oklahoma)

Sponsors: South Caddo County Conservation District
Tonkawa Creek Conservancy District

Size: 30,640 acres

Work Plan Approved: August 11, 1964

Estimated Total Cost of Project:

a. Federal Funds	\$ 1,210,786
b. Other	<u>1,088,072</u>
Total	\$ 2,298,858

Structural Measures:

Annual Cost	\$ 56,627
Annual Benefit	123,007
Benefit-Cost Ratio	2.17:1

Land Treatment:

a. Percent of Land Adequately Treated	75%
b. Percent of Planned Measures Applied 1-1-72	82%

Watershed Problems:

Floodwater, sediment, and scour damages to agricultural land.
Damages to roads and bridges. Interruption of travel.
Inadequate channel capacity.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

12 floodwater retarding structures
7.2 miles of channel improvement
1 grade stabilization structure

Structural Measures Installed or Contracted July 1972:

12 floodwater retarding structures
1 grade stabilization structure

Easement Status:

Need only 2 pipe line easements.

Acres Flood Plain Protected within Watershed: 3,243

Effectiveness of Project:

Landowners have credited the structures with preventing flooding during recent spring storms. Revegetation including both weeping lovegrass and Bermudagrass continue with rapid progress on the watershed. All of the sites are being used for recreation purposes such as fishing and hunting.

Turkey Creek Watershed (Custer and Washita Counties, Oklahoma)

Sponsors: Washita County Conservation District
Upper Washita Conservation District

Size: 47,320 acres

Work Plan Approved: August 1, 1958

Estimated Total Cost of Project:

a. Federal Funds	\$ 763,670
b. Other	<u>1,499,886</u>
Total	\$2,263,556

Structural Measures:

Annual Cost	\$ 31,281
Annual Benefit	79,927
Benefit-Cost Ratio	2.56:1

Land Treatment:

a. Percent of Land Adequately Treated	60%
b. Percent of Planned Measures Applied 1-1-72	65%

Watershed Problems:

Floodwater, sediment and scour damages to agricultural land.
Damage to railroads, County and State roads, and bridges.
Interruption of travel.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

12 floodwater retarding structures 1/

Structural Measures Installed July 1972:

12 floodwater retarding structures 1/

Easement Status:

Complete

Acres Flood Plain Protected within Watershed: 1,820

Effectiveness of Project:

From May 31 to June 1, 1968, a 5.93 inch rainfall was officially recorded in a two and one-half hour period on the east and north side of Turkey Creek. There was no appreciable damage below structures although extensive damage did occur above the structures. Seventy acres are being irrigated from sites 9 and 10. Approximately 70 people use the sites for fishing. Sites 6 and 7 are used by the City of Clinton to store municipal water.

1/ Two sites which have multi-purpose use (municipal water supply) were planned as single purpose structures.

Upper Washita River Watershed (Roger Mills County, Oklahoma and Hemphill,
Wheeler and Roberts Counties, Texas)

Sponsors: Hemphill County Conservation District, Texas
Wheeler County Conservation District, Texas
Roberts County Conservation District, Texas
Upper Washita Conservation District, Oklahoma

Size: 471,730 acres

Work Plan Approved: July 6, 1959

Estimated Total Cost of Project:

a. Federal Funds	\$ 5,554,666
b. Other	<u>2,521,240</u>
Total	\$ 8,075,906

Structural Measures:

Annual Cost	\$ 160,291
Annual Benefit	207,579
Benefit-Cost Ratio	1.30:1

Land Treatment:

a. Percent of Land Adequately Treated	62%
b. Percent of Planned Measures Applied 1-1-72	60%

Watershed Problems:

Floodwater and sediment damages to agricultural land.
Interruption of travel on roads and railroads.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

70 floodwater retarding structures 1/
3 grade stabilization structures
8 critical area treatments

Structural Measures Installed July 1972:

70 floodwater retarding structures 1/
3 grade stabilization structures
2 critical area treatments

Easement Status:

6 critical area cleared
2 critical area need 2 easements

Acres Flood Plain Protected within Watershed: 19,221

Effectiveness of Project:

The landowners in this watershed have been able to develop and intensify their farming and ranching operations due to the flood protection that is provided. They have no loss of irrigation systems, crops, land, etc due to flooding. It also provides recreation areas in the watershed. Sites 42 and 53 have been developed by Forest Service for recreation. Site 40 is open for fishing by permission of landowner. Site 58 is being used for irrigation.

1/ Two sites which have multi-purpose use (recreation development) were planned as single purpose structures.

Washington Creek Watershed (Garvin and McClain Counties, Oklahoma)

Sponsors: Garvin County Conservation District
McClain County Conservation District

Size: 17,488 acres

Work Plan Approved: December 1954

Estimated Total Cost of Project:

a. Federal Funds	\$ 393,414
b. Other	<u>207,366</u>
Total	\$ 600,780

Structural Measures:

Annual Cost	\$ 11,355
Annual Benefit	14,764
Benefit-Cost Ratio	1.30:1

Land Treatment:

a. Percent of Land Adequately Treated	55%
b. Percent of Planned Measures Applied 1-1-72	50%

Watershed Problems:

Floodwater, sediment, and scour damages to agricultural land.
Damages to roads and bridges.

Project Purposes:

Flood Prevention

Structural Measures Planned July 1972:

3 floodwater retarding structures

Structural Measures Installed July 1972:

0 floodwater retarding structures

Easement Status:

All easements needed. Those heretofore obtained have expired.

Acres Flood Plain Protected within Watershed: 841

Wayne Creek Watershed (Garvin and McClain Counties, Oklahoma)

Sponsors: McClain County Conservation District
Garvin County Conservation District

Size: 20,574 acres

Work Plan Approved: January 1952

Estimated Total Cost of Project:

a. Federal Funds	\$ 107,816
b. Other	145,870
Total	<u>\$ 253,686</u>

Structural Measures:

Annual Cost	\$ 3,384
Annual Benefit	17,557
Benefit-Cost Ratio	5.19:1

Land Treatment:

a. Percent of Land Adequately Treated	89%
b. Percent of Planned Measures Applied 1-1-72	90%

Watershed Problems:

Floodwater, sediment, and erosion damages to agricultural and non-agricultural land.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

2 floodwater retarding structures

Structural Measures Installed July 1972:

2 floodwater retarding structures

Easement Status:

Complete

Acres Flood Plain Protected within Watershed: 1,145

Effectiveness of Project:

There are only two sites in this watershed. Definite changes are taking place below each structure. Floods have been eliminated below each site and immediately adjacent to the Washita River bottom land. During a storm of May 17 and 18, 1957, the floodwater retarding structures in place were credited with reduction of floodwater and sediment damage by 70 percent.

West Laterals to Texoma (Johnston and Marshall Counties, Oklahoma)

Sponsors: Johnston County Conservation District
Marshall County Conservation District

Size: 37,033 acres

Work Plan Approved: To be included in planning of Reach IV of Washita
River

Whiteshield Creek Watershed (Beckham, Custer, and Roger Mills
Counties, Oklahoma)

Sponsors: North Fork of Red River Conservation District
Upper Washita Conservation District

Size: 17,384 acres

Work Plan Approved: February 21, 1962

Estimated Total Cost of Project:

a. Federal Funds	\$ 391,882
b. Other	165,997
Total	\$ 557,879

Structural Measures

Annual Cost	\$ 17,118
Annual Benefit	22,339
Benefit-Cost Ratio	1.31:1

Land Treatment:

a. Percent of Land Adequately Treated	70%
b. Percent of Planned Measures Applied 1-1-72	72%

Watershed Problems:

Floodwater, sediment, and scour damages to agricultural and non-agricultural land.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

20 floodwater retarding structures
19 grade stabilization structures

Structural Measures Installed July 1972:

18 floodwater retarding structures
19 grade stabilization structures

Easement Status:

All easements are needed on two sites

Acres Flood Plain Protected within Watershed: 1,291

Effectiveness of Project:

When the Washita River is flowing 3/4 to bank full, Whiteshield overflows at the lower end. In August 1970 a 5 to 6 inch rain fell in 5 to 5½ hours on the lower end of this watershed.

Flooding occurred on the lower end only. In May 1972 a 5 inch rain fell in 4 hours. Flooding on the lower ½ mile occurred.

Wildhorse Creek Watershed (Stephens, Garvin, Carter, and Murray Counties,
Oklahoma)

Sponsors: Stephens County Conservation District
Arbuckle Conservation District
Garvin County Conservation District
Murray County Conservation District
City of Duncan
City of Elmore City

Size: 427,943 acres

Work Plan Approved: August 10, 1964

Estimated Total Cost of Project:

a. Federal Funds	\$ 13,127,658
b. Other	6,365,757
Total	<u>\$ 19,493,415</u>

Structural Measures:

Annual Cost	\$ 701,426
Annual Benefit	1,061,640
Benefit-Cost Ratio	1.51:1

Land Treatment:

a. Percent of Land Adequately Treated	86%
b. Percent of Planned Measures Applied 1-1-72	72%

Watershed Problems:

Floodwater, sediment, and scour damages to agricultural land. Damages to roads and bridges. Interruption of travel. Need for municipal water supplies for Elmore City and Duncan. Need for irrigation water supplies in the watershed. Need for recreational areas in the watershed.

Project Purposes:

Flood prevention
Municipal water supplies
Irrigation water supplies
Recreation

Structural Measures Planned July 1972:

- 1 multipurpose structure with flood prevention and municipal storage
- 2 multipurpose structure with flood prevention, municipal and recreation storage plus recreation facilities
- 2 multipurpose structure with flood prevention and irrigation
- 112 floodwater retarding structures
- 34.7 miles of channel improvement
- 3 grade stabilization structures
- 2 recreation developments

Structural Measures Installed or Contracted July 1972:

- 1 multipurpose structure with flood prevention and municipal storage
- 2 multipurpose structures with flood prevention, municipal and recreation storage plus recreation facilities
- 2 multipurpose structure with flood prevention and irrigation
- 87 floodwater retarding structures
- 7.1 miles of channel improvement
- 2 grade stabilization structures
- 1 recreational development

Easement Status:

There are 24 sites which need approximately 40 easements. Six of these sites (48, 60, 105, 108, 109, and 110) have all easements except for oil field equipment. Several easements are needed for the channel improvement area.

Acres Flood Plain Protected within Watershed: 32,976

Effectiveness of Project:

All structures are installed on the upper reaches of this watershed and most of the flood plain is being put to intensive use. These structures are discharging floodwater in an orderly fashion. Where the new channel has not been constructed some flooding occurs and improvement of flood plain is small. Where the new channel has been built flooding has been eliminated and improvement of the flood plain is again apparent. Channel improvement needs to be completed. There hasn't been any extensive flood damage on this watershed since 1957. This is the largest sub-watershed of the Washita River Watershed. Three sites serve as municipal and recreational developments. Lake Humphrey and Lake Fuqua have a combined 45,000 acres of drainage and these serve as exceptional control factors. Good crops are once more grown on the flood plain. Several sites are being used for fishing. Site No. 92 is leased to a youth camp. Several sites are being used as a source of water used in the oil fields. Site 28 is being used for household use. Sites 26 and 34 are multipurpose sites being used for irrigation.

Winter Creek Watershed (Grady and McClain Counties, Oklahoma)

Sponsors: Grady County Conservation District
McClain County Conservation District

Size: 61,722 acres

Work Plan Approved: October 11, 1963

Estimated Total Cost of Project:

a. Federal Funds	\$ 1,557,231
b. Other	301,922
Total	<u>\$ 1,859,153</u>

Structural Measures:

Annual Cost	\$ 57,707
Annual Benefit	169,900
Benefit-Cost Ratio	2.94:1

Land Treatment:

a. Percent of Land Adequately Treated	75%
b. Percent of Planned Measures Applied 1-1-72	77%

Watershed Problems:

Floodwater, sediment, and erosion damages to agricultural and non-agricultural land. Interruption of travel on roads.

Project Purposes:

Flood prevention

Structural Measures Planned July 1972:

25 floodwater retarding structures

Structural Measures Installed July 1972:

22 floodwater retarding structures

Easement Status:

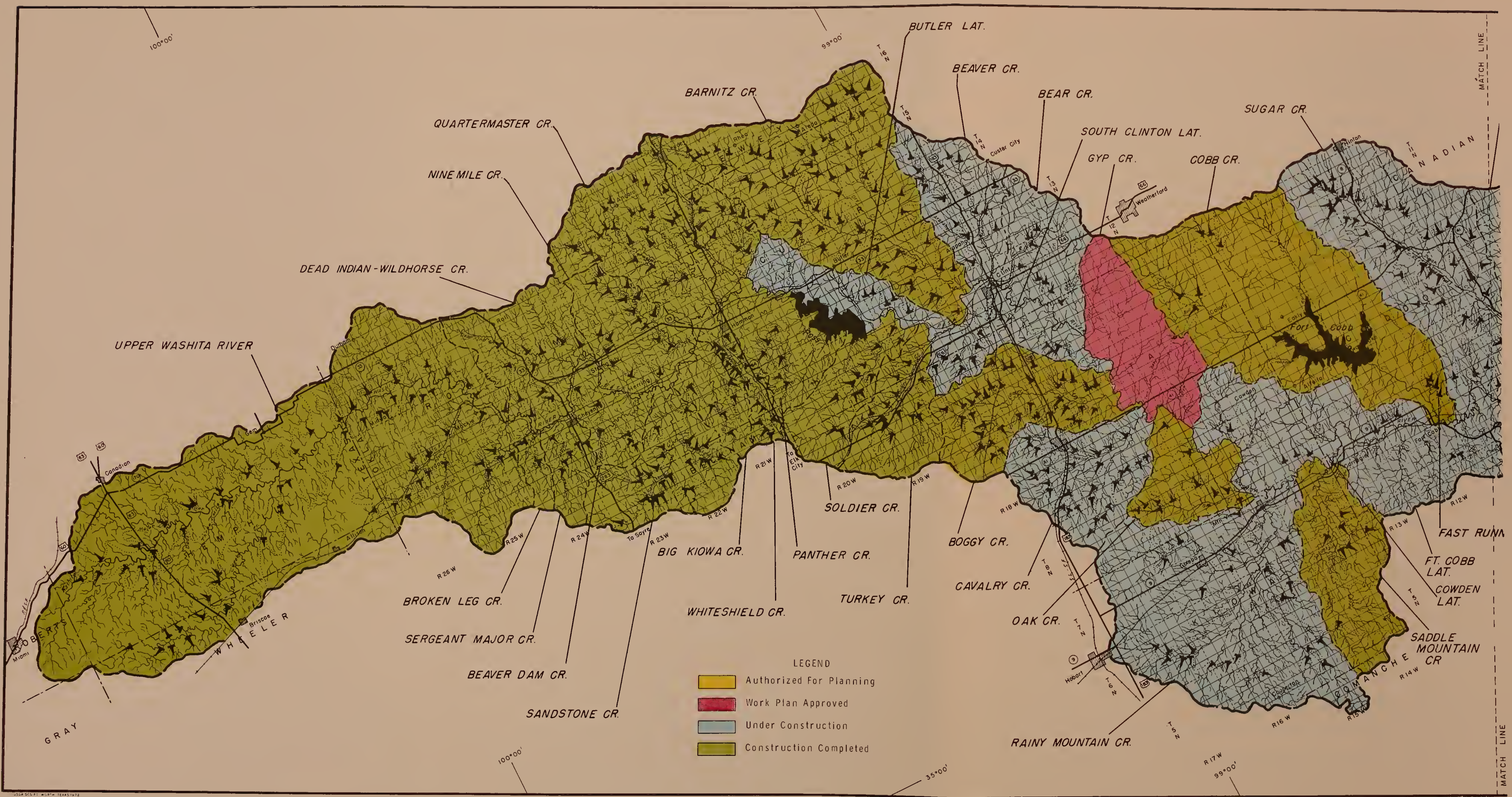
2 sites cleared

1 site needs 1 easement

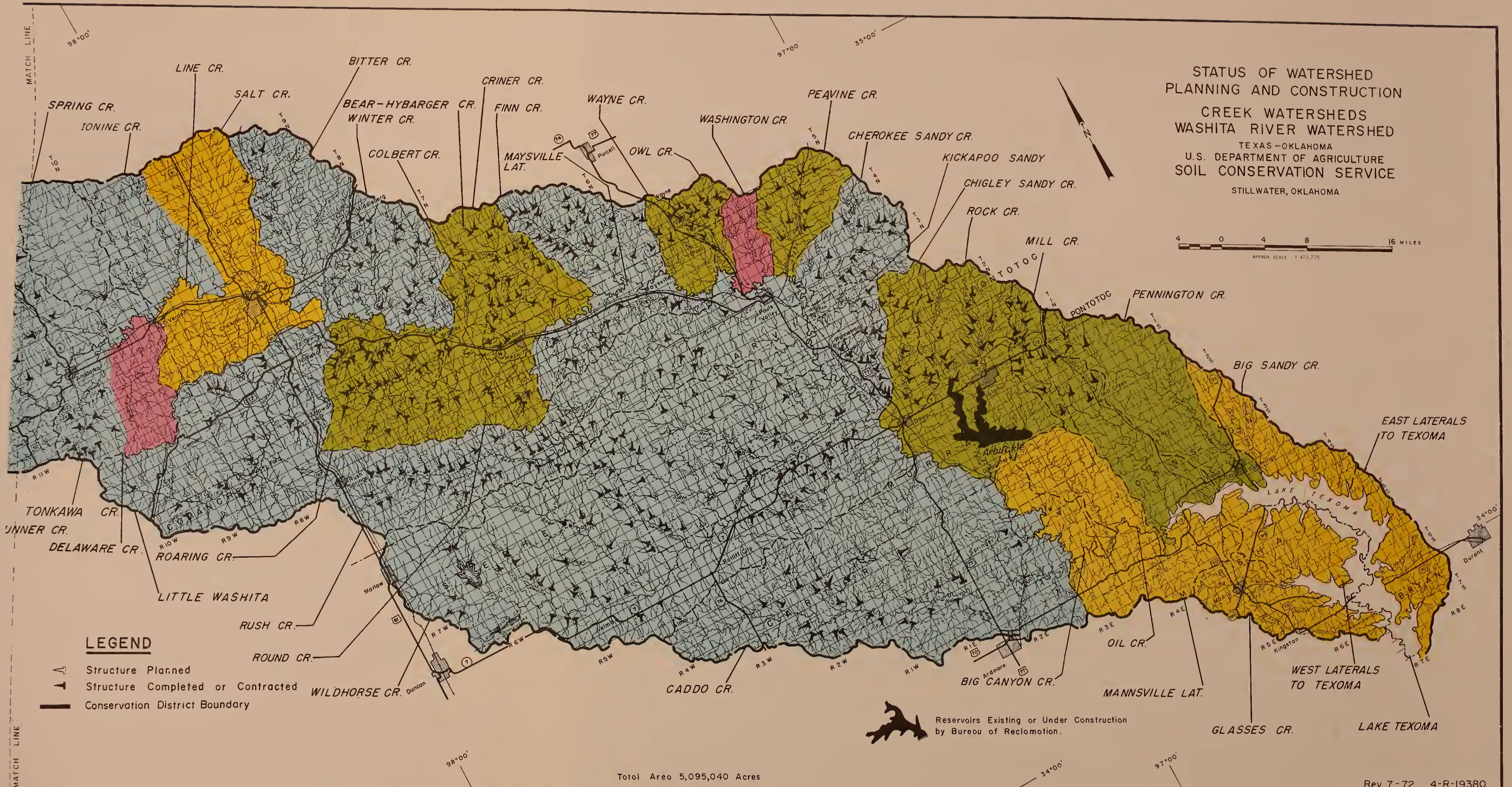
Acres Flood Plain Protected within Watershed: 2,825

Effectiveness of Project:

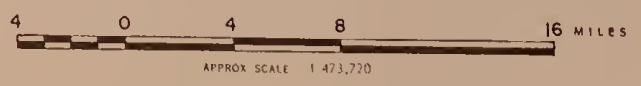
The sites completed have been effective in reducing flood damages below the structures.



- LEGEND
- Authorized For Planning
 - Work Plan Approved
 - Under Construction
 - Construction Completed



STATUS OF WATERSHED
PLANNING AND CONSTRUCTION
CREEK WATERSHEDS
WASHITA RIVER WATERSHED
TEXAS-OKLAHOMA
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
STILLWATER, OKLAHOMA



LEGEND

- Structure Planned
- Structure Completed or Contracted
- Conservation District Boundary



Reservoirs Existing or Under Construction
by Bureau of Reclamation.

Total Area 5,095,040 Acres

Rev. 7-72 4-R-19380

Rev. 7-72 Bosc 4-R-19273

